US Army Corps
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HUNTSVILLE DIVISION

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Base Realignment and Closure

Ordnance, Ammunition and Explosives

# ARCHIVES SEARCH REPORT

# CONCLUSIONS AND RECOMMENDATIONS

# FORT DEVENS

Ayer, Massachusetts

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Prepared by
US ARMY CORPS OF ENGINEERS
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ORDNANCE, AMMUNITION AND EXPLOSIVES

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FOR
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## TABLE OF CONTENTS

ORDNANCE, AMMUNITION AND EXPLOSIVES

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# CONCLUSIONS AND RECOMMENDATIONS
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**FT. DEVENS**
AYER, MASSACHUSETTS

## 1.0 Introduction

### 1.1 Authority

Congress has enacted two laws since 1988 that provide for the closure, in part or in whole, of 125 military bases/facilities and the realignment of almost 100 others. The principal mechanism for implementing the policy in both statutes has been an independent, bipartisan commission. Two of the most pressing issues are (1) providing assistance to local communities economically impacted by base closures and (2) establishing a cost-effective program of environmental clean-up at bases prior to their disposition.

During the decade of the 1980's, no major military bases were closed, largely because of procedural requirements established by Congress. After several legislative efforts to break the deadlock failed, Congress introduced a new base closure procedure in P.L. 100-526, enacted October 24, 1988. The statute established a bipartisan commission to make recommendations to Congress and the Secretary of Defense on closures and realignments.

On December 28, 1988, the commission issued its report, recommending closure of 86 installations, partial closure of 5, and realignment of 54 others. The Secretary of Defense approved its recommendation on Jan 5, 1989. Since the commission approach adopted by Congress was successful, new base closure legislation was introduced (P.L. 101-510) which also relied upon the services of an independent commission. This commission, in accordance with a statutory provision, is to meet in 1991, 1993 and 1995.

The Defense Base Closure and Realignment of 1990 (1990 Base Closure Act), Public Law 101-510 established the process by which DOD installations would be closed and/or realigned. In April 1991, the Defense Base Realignment and Closure Commission's 1991 (BRAC 91) report recommended Fort Devens, Massachusetts, to be closed.

Legislation introduced and being considered in the 102d Congress contains language to increase assistance to individuals and communities affected by base closures as well as to accelerate DOD's environmental restoration activities.

On April 5, 1990, U.S. Army Engineer Division, Huntsville (USAEDH) was designated as the USACE Mandatory Center of Expertise (MCX) and Design Center for Ordnance and Explosive Waste (OEW). USAEDH will also design and implement OEW remediation

programs for other branches of the Department of Defense when requested. In cooperation with the Huntsville Division and the New England Division, the U.S. Army Corps of Engineers St. Louis District has been assigned the task of preparing an Archives Search Report for Fort Devens, Massachusetts, detailing ordnance, ammunition, and explosives, suspected chemical warfare materials (CWM) and any other warfare materials (i.e. radiological, biological).

## 1.2 Subject

The subject installation, Ft. Devens, has been in existence since 1917 when over 11,000 acres were leased to form Camp Devens. During the years the installation was on active status, all types of ordnance and chemical warfare materials and training have been conducted. In the years the camp was placed in caretaker status, it was used during the summers for ROTC, CMTC, and National Guard training. Currently, the training areas and ranges are located on what is known as South Post. Up until the 1960's, there were ranges and training areas located on the North and Main Posts. Portions of the North and Main Posts are being returned to civilian use in the near future. The South Post will remain in DOD hands and will be used by the National Guard for training purposes.

## 1.3 Purpose

This Archives Search Report (ASR) compiles information obtained through historical research at various archives and records holding facilities, interviews with individuals associated with the site or its operations, and personal visits to the site. All efforts were directed towards determining types of munitions used at the site, possible disposal areas, and any unknown training areas. Information obtained during this process was used in developing recommendations for further actions at the site.

## 1.4 Scope

The entire installation will be investigated through archives searches for the types, quantities, and probable locations of ordnance items abandoned by DOD prior to relinquishing ownership of Fort Devens, Massachusetts. Information contained herein is based on the review of existing documents, interviews, observations, site specific geology, and descriptions of known or suspected contamination.

## 2.0 Conclusions

### 2.1 General History and Ordnance/Chemical Warfare Activity

#### 2.1.1 World War I (1917-21)

##### 2.1.1.1 History

The Department of War leased approximately 11,000 acres and created Camp Devens, named for Civil War General and former US Attorney General Charles Devens, in response to America's entry into World War I. Construction began on the camp, which served the war effort as New England's reception center for draftees, on June 18, 1917. The post processed 100,000 men during the war. Two divisions (the 76th and the 12th), comprised mainly of men from the northeastern states, trained at the camp from August 1917 to November 1918. Although originally designed to house and train 28,000 soldiers, Camp Devens, at the height of the war, accommodated 42,000 men. Once the war ended in Europe, Camp Devens operated a demobilization center, separating 115,000 men from the Army. Between 1919 and 1921, the government purchased much of the land it had previously leased at Camp Devens. The acreage involved in the purchase, however, was less than the original size of the post due to the post-war reduction in activity. In September 1921, the War Department declared the camp excess to the needs of the US Army and placed it in caretaker status (Ft. Devens 1981: 2 [APPENDIX C-1.38]; Knepper 1989: 5 [APPENDIX C.1-68]; Fitch and Glover 1989: C74-C80 [APPENDIX C-1.37]; Roberts 1987: 397 [APPENDIX C-1.86]; US Army Center of Military History 1988: 696 [APPENDIX C-1.94]; Glover 1993: 155 [APPENDIX C-1.64]).

##### 2.1.1.2 Ordnance, Ammunition and Explosives Activity

Troops received several types of training at the camp. The first grenade range in the United States was at Devens, and the men conducted small arms training and fired Colt machine guns on ranges on what is now known as North Post. Soldiers prepared for the trench warfare used in the First World War on the bayonet and assault courses. The latter combined live firing at targets and bayonet attacks on trenches. In March 1918, live firing of artillery began at Camp Devens. The 302nd Field Artillery used their four eighteen-pound artillery pieces on a range "in the wild country back of the camp" (Robinson 1920: 78, 85-89, 97 [APPENDIX C-1.87]; Engineering Department 1917 [APPENDIX C-1.25]). Photographs from Construction Completion Reports document the existence of at least one magazine and a powder storage building (Quartermaster General 1917a [APPENDIX C-1.83]).

##### 2.1.1.3 Chemical Warfare Activity

Across from the base hospital, the soldiers received their gas defense training. One gas chamber used tear gas; the men entered with no protection in order to understand the significance of just a mild, non-toxic gas. In the second chamber the men, while wearing their masks, were exposed to "various kinds of poisonous gases." Soldiers received additional

training in the trench network established in the same area. Instructors released "chlorine and other deadly fumes" through the area, and the men fought the gas clouds with fires, fans, beaters, and spades (Robinson 1920: 68-69 [APPENDIX C-1.87]). The Construction Completion Report of Camp Devens includes photographs of both the tear gas and chlorine gas chambers (Quartermaster General 1917b [APPENDIX C-1.84]). At the National Archives, the index to the correspondence of the Chemical Warfare Service for this time period includes the mention of a Camp Devens requisition for 100 pounds of No. 40 and 100 pounds of No. 50 dynamite, but research did not uncover the actual requisition (Index Briefs, Chemical Warfare Service, Camp Devens, n. d. [APPENDIX C-1.66]).

### 2.1.2 Inter-war Period (1921-1940)

#### 2.1.2.1 History

Although in caretaker status, the War Department recommended retaining all the land for training purposes. Little or no money, however, was allocated for the maintenance of the facilities retained at the camp. The government salvaged or sold many of the other facilities (War Department 1922 [APPENDIX C-1.104]). During this time period, the Reserve Officer Training Corps (ROTC), the Citizen's Military Training Corps (CMTC), the National Guard and US Army Reserve units used Camp Devens for many types of training. The ROTC cadets staged their summer camps for advanced students, and the CMTC exposed young men (usually high-school age) to the values of citizenship, military discipline, and physical activity at Camp Devens (First Corps Area 1922b [APPENDIX C-1.33]). The Chemical Warfare Reserve of the First Corps Area also operated a chemical school on the post (*The Boston Globe* 1925 [APPENDIX C-1.8]). In 1929 the War Department granted scientist and rocket pioneer R. H. Goddard permission to use the post as a test site (Abott et al. 1929 [APPENDIX C-1.1]). In 1928 construction started on several permanent barracks, and the War Department redesignated the camp a permanent installation and renamed it Fort Devens in 1931. President Franklin D. Roosevelt's New Deal programs, designed to combat the unemployment and economic dismay of the Great Depression, completed much of the construction at the fort during the 1930's. The Works Progress Administration (WPA), a program that constructed public facilities across the country, and the Civilian Conservation Corps (CCC), an organization that employed young men to enact conservation tactics in the nation's parks, built many of Fort Devens' facilities prior to the Second World War (Ft. Devens 1981: 2 [APPENDIX C-1.38]; Fitch and Glover 1989: C80 [APPENDIX C-1.37]; Knepper 1989 [APPENDIX C-1.68]).

#### 2.1.2.2 Ordnance, Ammunition and Explosives Activity

During the summer camps of this period, the training conducted often required the temporary acquisition of land for an artillery range. Research uncovered negotiated leases and other correspondence pertaining to artillery firing in 1924, 1925, 1928, and 1929. A letter from the War Department in 1936, addressing the complaint of a local resident, revealed that the artillery range at Fort Devens closed in 1933, but the rifle range located around Cranberry

Pond continued to be used (Boston Quartermaster Intermediate Depot 1924a [APPENDIX C-1.9]; 1924b [APPENDIX C-1.10]; Commonwealth of Massachusetts 1924 [APPENDIX C-1.20]; First Corps Area, Headquarters 1924b [APPENDIX C-1.35]; Quartermaster Corps 1929 [APPENDIX C-1.82]).

#### 2.1.2.3 Chemical Warfare Activity

In the summer of 1922, Camp Devens received several shipments of BM smoke candles (a total of 800 candles of various sizes). Many of these candles possessed faulty starters, and they had to be ignited by placing them next to a properly functioning candle (First Corps Area, Headquarters 1922a [APPENDIX C-1.32]). In 1925, the Chemical Warfare Reserve of the First Corps Area staged a demonstration for some of New England's chemists, professors, and students. It laid down smoke screens using Stokes mortars and tear gas candles. A few visitors were chosen to throw phosphorus hand grenades (*The Boston Globe* 1925 [APPENDIX C-1.8]). In January 1931, the CWS received a requisition from the Chemical Officer at Camp Devens for 8 Livens Projector FM (screening) smoke shells (Chemical Warfare Service 1931a [APPENDIX C-1.13]). In the summer of 1931, Camp Devens expended 100 HC (screening smoke) candles, and it maintained a supply of 1000 unserviceable CN (tear gas) candles. These candles had been stored at the camp for some time: 50 for nine years, 600 for eight years, and 350 for six years. The 13th Division of Camp Devens also requested an additional 54 tear gas candles, 60 smoke substitute candles, and 60 electric squibs (Chemical Warfare Service 1931b [APPENDIX C-1.14]). The Chemical Officer of the 13th Infantry Division acknowledged his pleasure with the training value of Gas ID Sets. He heralded their use in teaching gas "identification by sight, color, smoke in detonation, and odor." He also revealed that he encountered no malfunctions in training (Chemical Officer, Fort Devens 1936 [APPENDIX C-1.12]). The CMTC camp conducted during the summer of 1937 involved gas defense training, and the Army Reserve troops fired both four and 4.2-inch chemical mortars (Chemical Warfare Service 1937 [APPENDIX C-1.15]). During the camp from 17-30 July 1938, a four inch chemical mortar malfunctioned, but since only a few of this type of shell remained in service, no action was taken by the Chemical Warfare Service (Chemical Warfare Service 1938 [APPENDIX C-1.16]). In this time period, the index to the correspondence of the Chemical Warfare Service referenced the following material associated with Camp/Fort Devens: CN (Tear gas) capsules, defective Livens Projector fuzes, smoke pots, and grenades for CMTC and ROTC camps (Index Briefs, Chemical Warfare Service, Camp Devens, Fort Devens, n.d. [APPENDIX C-1.66, C-1.67).

### 2.1.3 World War II (1940-1946)

#### 2.1.3.1 History

After the Second World War started in Europe, Fort Devens received a rehabilitation in preparation for America's entry into the conflict. It increase by at least 5200 acres (see Section 2.3 for real estate information). New construction included 1200 temporary buildings,

two new hospital complexes, and the Fort Devens Army Airfield--later named Moore Army Airfield, after an Ayer man who was killed in Vietnam. The post once again served as New England's major reception center. The fort hosted the 1st, 32nd, and 45th Divisions, a Women's Army Corps (WAC) unit, the 4th Engineer Amphibian Brigade, and the 366th Infantry Regiment. The fort also provided training for a variety of support personnel including nurses, chaplains, cooks, and bakers, and the government interned 5000 German prisoners-of-war at Devens from 1944-46. Several experimental aspects of modern warfare were used at the post, including amphibious assaults, tank-destroyer units, and combined armor-infantry operations. In August 1944, jurisdiction over the airfield temporarily transferred to the US Navy, which used it as an auxiliary landing field for the Naval Air Station at Squantum, MA, and carrier-based aircraft. Control of the airfield returned to the post on 15 January 1946. As after World War I, Fort Devens processed soldiers returning to civilian life at the conclusion of World War II. On 30 June 1946, it returned to caretaker status (Fort Devens 1981: 2-3 [APPENDIX C-1.38]; Fitch and Glover 1989: C84 [APPENDIX C-1.37]; Air Technical Service Command 1944 [APPENDIX C-1.2]; War Assets Administration 1947 [APPENDIX C-1.100; War Department, Operations and Training 1941 [APPENDIX C-1.105]).

### 2.1.3.2 Ordnance, Ammunition and Explosives Activity

In 1940 the WPA enclosed the existing ordnance storage facilities and the area designated for future magazines at Fort Devens with a chain link fence. The existing facilities consisted of one 20x24' magazine which held 7500 pounds of tear gas grenades and three 8x8' magazines containing 75 pounds of blasting caps, 500 pounds of TNT, and pyrotechnics, respectively. The proposed facilities included two 26x42' structures: one with 30,000 pounds of class one explosives and the other with 10,000 pounds of class one and 30,000 pounds of class four explosives. Also in the proposed facilities were two 20x24' structures with one containing 2500 pounds of 4.2-inch chemical mortars and 4200 pounds of smoke pots, and the other holding 800 pounds of blank ammunition and 1500 pounds of .30 caliber blanks (Fort Devens, Headquarters 1940 [APPENDIX C-1.42]). During this period, Fort Devens was too small for the field artillery units of the 1st Division to conduct firing missions, and cost prohibited the acquisition of sufficient land in the vicinity. Artillery units from the post travelled to other New England forts in order to conduct live firing (War Department, Operations and Training 1941 [APPENDIX C-1.105]). The improvements located on the North Post near the airfield included three magazines (P-223, P-224, P-225) which held small arms ammunition, segregated ordnance, and pyrotechnics, respectively; one machine gun clipping building (T-1900); and one ordnance repair building (T-1904) (War Assets Administration c1946 [APPENDIX C-1.99]).

### 2.1.3.3 Chemical Warfare Activity

The First Division Chemical Warfare School provided its students instruction in chemical agent identification and classification, gas cloud travel, chemical protection, weapons and tactics, locating gassed areas, preparation of gas chambers, duties of gas officers, riot duty,

and maintenance of gas masks (First Division, Headquarters 1941 [APPENDIX C-1.36]). In May 1942 the 45th Infantry Division, stationed at Fort Devens, requested fifty pounds of solid tear gas (CN), twenty gallons of Carbon Tetrachloride, and as many tear gas pots as available (Fifth Army Corps, Rear Echelon, Headquarters 1942a [APPENDIX C-1.28]). On 01 June 1942, the chemical depot at Edgewood Arsenal sent 32 M1 Gas ID Sets to Fort Devens for the 45th Infantry Division. The depot also received permission to send 790 pounds of FS and 309 pounds of CNB to the 164th Tank Destroyer Battalion on 20 June 1942 (Fifth Army Corps, Rear Echelon, Headquarters 1942b [APPENDIX C-1.29]). The Chemical Depot at Edgewood Arsenal approved the shipment of de-mustardizing bleach, a non-corrosive decontaminator, gas mask repair kits, gas proof curtains, protective ointment, and dust respirators on 17 August 1942 (Fort Devens, Chemical Officer 1942a [APPENDIX C-1.39]). In the next month, Fort Devens received the authorization for the equipment necessary for two flame throwers: 180 gallons of petroleum blend, 36 cylinders of nitrogen, and 9 cylinders of hydrogen. The chemical depot at Edgewood Arsenal also planned to ship Fort Devens 100 CN capsules, 6 HC smoke pots, 11 M2 incendiary bombs, 140 #8 detonators, 2 field ID sets, 4 CN pots, 4 chemical land mines, 11 pounds of liquid mustard gas, 74 pounds of FS smoke mixture, 16 pounds of a mustard simulator, 97 vesicant detecting crayons, 85 mustard detecting kits, 8215 gas resistant sacks, 74 decontaminating brushes, 1188 frangible grenades, and one flame thrower service kit, but research failed to uncover an acknowledgement of receipt from Fort Devens (Fort Devens, Chemical Officer 1942b [APPENDIX C-1.40]; Chemical Warfare Service, Office of the Chief 1942 [APPENDIX C-1.18]). The evaluation of the training capabilities of Fort Devens disclosed that the chemical training area was far enough away from the main camp for the use of live agents. The post gas chamber used both tear gas and chlorine (Fort Devens, Chemical Officer 1942a [APPENDIX C-1.39]). Amphibious training conducted at Robbins Pond included the use of floating smoke pots and demolition charges on land to simulate live bombs in combat (Fort Devens, Chemical Officer 1942a [APPENDIX C-1.39]). The index to the correspondence of the Chemical Warfare Service also mentioned gas proof shelters, incendiary bombs, hand grenades, and the use of primacord with detonating gas ID sets in connection with Fort Devens (Index Briefs, Chemical Warfare Service, Fort Devens, n.d. [APPENDIX C-1.67]).

### 2.1.4 Post World War II (1946-Present)

#### 2.1.4.1 History

While in caretaker status, the Massachusetts State College used the post as a university extension, offering college degrees to returning veterans. One of the hospital facilities housed students during this period. This activity ended after the post returned to active status in the summer of 1948. During the Korean War, the post was a reception and separation center for the soldiers, and the 7th Regimental Combat Team trained at Devens before going overseas. The post remained active after the Korean Conflict and trained regular army, national guard and ROTC units. The US Army Security Agency School, later the US Army Intelligence School, moved to the fort in 1951. The 2nd Infantry Brigade, a Strategic Army Corps (STRAC) unit, trained at Devens in the 1950's and 1960's. The 196th Light Infantry Brigade

trained at the post before deploying for the Vietnam Conflict. Fort Devens also sent several units to the Middle East in 1990-91 for Operations Desert Shield/Storm and Provide Comfort. During this time period, certain sections of Fort Devens property changed owners. In May 1946, the War Department declared the airfield excess to its needs, except for one hangar, some apron space, and landing rights. The town of Ayer acquired this property but returned it to the fort in 1952. In the late 1960's, a portion of the South Post was transferred to the U.S. Fish and Wildlife Service; this land is the Oxbow National Wildlife Refuge. The post survived a couple of closure threats in the 1970's and 1980's, but in April 1991, Fort Devens was placed on the closure list. The South Post is to be retained as a training area, but the Main and North Posts are scheduled for re-use (Army Times 1959a, 1994 [APPENDIX C-1.3]; *Division Engineer* 1946 [APPENDIX C-1.24]; Fitch and Glover 1989: C85-C87 [APPENDIX C-1.37]; Fort Devens 1981: 3 [APPENDIX C-11.38]; n.a. (*Fort Devens Dispatch)* 1991 [APPENDIX C-1.41b]; Knepper 1989 [APPENDIX C-1.68]).

2.1.4.2 Ordnance, Ammunition and Explosives Activity

The disposal of the airfield property to the city of Ayer included the three magazines. According to the Property Management Division of the War Assets Administration, the value of the salvageable material in the three magazines would not exceed the cost of disassembly and removal. A 1947 letter from the Office of the Division Engineer for New England declared the property free of explosives, requiring no decontamination (War Assets Administration 1947, 1948 [APPENDIX C-1.100, C-1.101). The ordnance storage area on the Main Post consisted of 18 magazines: 2-Stradley type, 12 World War II-era facilities, and 4 above ground structures. By the 1970's, the majority of the facilities were restricted to Class 1-5 explosives because of the proximity of a housing area. A small amount of Class 7 ordnance was on hand for use by the base's EOD unit (Sawyer 1975 [APPENDIX C-1.89]). The Fort Devens Ammunition Supply Point issued the following in fiscal year 1981: 40mm White Star Parachutes, 40mm Practice rounds, 57mm HEAT rounds, 60mm white phosphorus smoke rounds, 75mm blanks, 81mm mortar rounds (illuminating, high explosive, and white phosphorus), hand grenades (smoke, riot, and fragmentation), rockets (LAW, practice and high explosive), mines, riot control agents, smoke pots, illuminating signals, simulators (air and ground burst, booby trap, artillery, and hand grenade), trip flares, fuses, TNT demolition kits, shaped charges, detonating cord, and firing devices (n. a. 1982 [APPENDIX C-1.77]).

Although the training ranges were located on South Post, a description of their uses provides an indication of the types of ordnance that may have been stored on Main Post. An infiltration course, four rifle ranges, a rocket launcher range, three machine gun ranges, a demolition range, a live hand grenade range, a mock village, a pistol range, a close combat course, two combat ranges, two ranges for recoilless rifles and mortars, and one mortar range were used at Devens in the 1950's (Fort Devens, Headquarters 1954a, 1954b [APPENDIX C-1.47, C-1.48]). A "Tabulation of Existing and Required Facilities" completed in 1987 lists the following items at Devens: a gas chamber, MOUT/MAC Range, basic 25m firing range, M60 firing range, night firing range, known distance range, sniper training field, machine gun range, moving tank range, hand grenade assault range, grenade launcher range, light anti-

armor range, two mortar ranges, two combat pistol ranges, an infiltration course, two demolition areas, a skeet range/trap house, fourteen ammunition supply points, two weapons shops, fourteen ready magazines, and four fixed ammo magazines (STV/Lyon Associates Inc. 1987 [APPENDIX C-1.92]). The standard operating procedure for the mock village revealed that explosive charges and booby traps were used to enhance the training at this range. The trainees also used ball ammunition to a small degree (Fort Devens, Headquarters 1953a [APPENDIX C-1.43]). The 57mm, 75mm, and the 105mm recoilless rifle could be fired from Firing Areas #4 and 5, and 4.2-inch, 60mm, and 81mm mortars could be fired from Firing Areas #4, 5, and 6 (Fort Devens, Headquarters 1953b [APPENDIX C-1.44]). On 26 October 1953, a change in a training memorandum authorized the use of 60mm and 81mm mortars and the 57mm recoilless rifle on the Combat Firing Range (Fort Devens, Headquarters 1953c [APPENDIX C-1.45]). In 1954 the Operation Section of Fort Devens attempted to acquire trespass rights for 105mm howitzer firing positions. The matter was sent to the New England Division Engineer (Fort Devens, Headquarters 1954c [APPENDIX C-1.49]). The following year Fort Devens requested that the air space over the ranges be declared a danger area because of high angle artillery firing (Fort Devens, Headquarters 1954d [APPENDIX C-1.50]). In 1955 the 74th Regimental Combat Team began planning a demonstration for the Yankee Post of the American Ordnance Association. The exhibition scheduled for Range E was to highlight the firepower of the rifle company (Fort Devens, Headquarters 1955b [APPENDIX C-1.52]). A training directive said that the period of 7 October-1 November 1957 would be devoted to qualifying every member of the 4th Regimental Combat Team on their individual weapon on the 1000" Range (Fort Devens, Headquarters 1957a [APPENDIX C-1.55]). Engineer demolition training conducted at Range Z-I and Z-II required C-4 plastic explosives, TNT, Dynamite, Claymore anti-personnel mines, and M-67 Fragmentation grenades (10th Special Forces Group n. d. [APPENDIX C-1.93]). In 1989, the Material Technology Laboratory proposed putting a Shaped Charge Munitions Test Site at the Fox Range at Fort Devens. Research failed to unocver documentation verifying construction of this site (US Army Laboratory Command 1989 [APPENDIX C-1.95]).

Sometime in the early 1970's, low water on Mirror Lake revealed 200 World War II-era hand grenades, which were removed by the 14th EOD detachment at Fort Devens (Environmental Science and Engineering Inc. 1982 [APPENDIX C-1.26]). In 1979 a safety engineer called Fort Devens' hand grenade course obsolete, and the 40mm range was too small and over-vegetated. There was no firing shelter at the EOD range, and the storage facilities were restricted because a housing section was too close (Deans 1979 [APPENDIX C-1.22]). The following items were recovered by EOD personnel at Ft. Devens during calendar year 1984: black powder, C-4 explosives, CN/DM, Comp B, Dynamite, Lead Azide, Octol, PETN, White Phosphorus, flash powder, pyrotechnic compound, RDX Compound, Smokeless Powder, and TNT (14th EOD Detachment 1985 [APPENDIX C-1.63]). An unexploded ordnance search of the EOD, Zulu I, and Zulu II ranges at the post uncovered 2-HVAR warheads without fuzes and one 105mm HE projectile with a M51A5 Point-Detonating Fuse (UXB International Inc. 1991 [APPENDIX C-1.97]).

2.1.4.3 Chemical Warfare Activity

The North Post property transferred to the town of Ayer included the gas chamber (T-1856). The doors, windows, and lumber were regarded as salvageable, but the concrete foundation and floor were to remain on site (War Assets Administration 1947, 1948 [APPENDIX C-1.100, C-1.101). The "Station List" revealed the presence of the 278th Regimental Combat Team, 545th EOD Detachment, and the 1170th ASU--operating the Chemical Defense School--at Fort Devens. The instruction at this school included aspects of chemical, biological, and radiological (CBR) warfare. The field exercises included agent detection and decontamination. Demonstrations of various chemical weapons were also utilized. Most of the instruction for this school was conducted in Building T-3569. The ROTC Summer Camp Training Schedule included CBR defense, mine warfare, individual weapons training, machine gun training, use of mortars, rocket launcher and rifle grenade training, the use of recoilless rifles, and booby trap demonstrations (Fort Devens, Headquarters 1953d [APPENDIX C-1.46]; Chemical Defense School, First Army 1951, 1952 [APPENDIX C-1.11, C-1.11]; Fort Devens, ROTC Camp 1952 [APPENDIX C-1.62]). The Fort Devens Installation Plan for the fiscal year 1958 detailed the operation of the chemical section. Building T-3786 was designated the Chemical Warehouse, and the distribution of chemical warfare material occurred at the Ordnance Ammunition Supply Point. A 1958 training memorandum called Building T-3786 the location of the Chemical Property, Supply Warehouse and ACMS Divisions, and Building P-625 housed the Chemical Operations and Training Division and Warehouse. A 1960 supply bulletin declares that the Chemical Warehouse (T-3786) was the reception point for radioactive waste on post (Fort Devens, Headquarters 1958a, 1958b, 1960b [APPENDIX C-1.58, C-1.59, C-1.61]).

## 2.2 Summary of Conclusions

Based on archival research, personal interviews, and a site inspection, the potential for unexploded ordnance and chemical warfare material on portions of the installation does exist.

A Risk Assessment Code (RAC) of 1 was derived for Fort Devens. The Hazard Severity, if one would find any of the ordnance or chemical warfare material used, would be critical. The probability that one would find anything, based on site characteristics, is frequent (see Map M-15 for sites recommended for further action/remediation).

Since WWI, chemical warfare training has been conducted on Ft. Devens. Four stokes mortars, two filled with H or HD and two filled with FS, have been found on and off of the installation (one round, suspected to be filled with H, was found off post). During WWI, soldiers trained in the trenches while instructors released "chlorine and other deadly fumes" through the area. This trench training, as well as gas chamber training, occurred around the WWI Base Hospital. Training was also conducted with smoke filled stokes mortars and livens projectors, smoke and tear gas candles, and phosphorous filled hand grenades. Chemical training also included the use of Chemical Gas ID Sets and 4.2-inch chemical mortars.

During WWII, Edgewood Arsenal planned to ship to Ft. Devens, liquid mustard gas, chemical land mines, field ID sets, detonators, incendiary bombs, and tear gas capsules and pots. It is unknown if these items arrived at Ft. Devens. Equipment for flame throwers was also shipped.

Conventional ordnance training has also been conducted at Ft. Devens since WWI. Stokes mortars, livens projectors, and 18-lb artillery pieces were used during WWI. During WWII, the 164th Tank Destroyer Battalion trained at the installation. At this time, 2.36" rockets would have been used. Later, training was conducted with 3.5" rockets. One of these 3.5" rockets was found on the Main Post. Hand grenades have been found in Mirror Lake and in the Nashua River. Small arms training with machine guns, BARs, and pistols was also conducted on post. Several 37mm projectiles have been found on the Main Post. Up until the 1960's, training areas and ranges were located on the North and Main Posts. By 1970, all ranges were on the South Post, where they exist today. Training conducted on these ranges consisted of mortars, recoilless rifles, rockets, flame throwers, small arms, grenades, and disposal/detonation.

Ordnance has been found all over the North and Main Posts. The probability that more will be found is high.

There is a potential that radiological waste is on post also. Building T-3786, in 1958, was the reception point for radioactive waste.

St. Louis District personnel conducted a visual surface site inspection 20-30 March 1995. During these two weeks, three WWI 3" Stokes Mortars, eleven M1 Chemical Land Mines, and one 55 gallon Type B Chemical Drum were found. According to the EOD reports, the three 3" Stokes Mortars were identified as high explosive. The chemical mines and drum have not been tested at this time. These items have been contained and are being stored in the ASP at Ft. Devens. Typically, these items would have, at one time, contained the chemical HD. The incident reports are located in APPENDIX C-2.

## 2.3 Real Estate

In response to America's entry into World War I, the Department of War leased approximately 11,000 acres to create Camp Devens. In June 1919, the purchase of land for the permanent installation began, but the eventual size of the post was much smaller than the original 11,000 acres, probably due to the reduction of military activity after the end of the war. In 1921, when the land purchase was complete, the camp consisted of the land making up the North Post, most of Main Post, and the northeastern portion of South Post. Prior to the land acquisition just before the United States entered the Second World War, the camp occupied 4876 acres (Glover 1993: 155 [APPENDIX C-1.64]).

An additional 5289.26 acres--5287.16 acres fee, 2.0 acres easement, and .09 acrs lease--were acquired for the fort after 1 July 1940, bringing the post to a size of 10,165.26 acres (Arthur D. Little, Inc. 1994: Figures 5.2-1, 5.2-2). Other sources indicate that the size of the post added over 7600 acres, increasing its size to 12,557 acres (War Department, Operations and Training 1941 [APPENDIX C-1.105]).

The government disposed of 107 acres since 1955. It reported 1.00 acre fee to the General Services Administration (GSA) on 2 February 1955, and the post turned 60.0 acres fee over to the Commonwealth of Massachusetts on 9 December 1956. GSA received 22.0 acres fee from the government on 2 October 1968, and the National Park Service of the Department of Interior acquired 24.0 acres fee on 29 November 1991 (Arthur D. Little, Inc. 1994: Figures 5.2-1 , 5.2-2).

2.4 Site Inspection

**CELMS-PM-M** April 3, 1995

**MEMORANDUM FOR** Mike Dace, PM-M

**SUBJECT:** Trip Report for 20 through 30 March 1995. Site Visit for Fort Devens, Massachusetts, Base Realignment and Closure (BRAC).

1. SLD Personnel on trip

| Week 20 - 24 Mar | | Week 27 - 30 Mar | |
|---|---|---|---|
| Rochelle Ross | PM-M | Rochelle Ross | PM-M |
| William K. James | PM-M | Randy Fraser | PM-M |
| Randy Fraser | PM-M | Hank Counts | PM-M |
| David Tajkowski | PD-R | David Tajkowski | PD-R |

2. 20 MARCH 1995: Team members James, Fraser and Tajkowski departed St Louis Airport at 0750 am on March 20, 1995, and arrived in Boston, MA at 1123 the same morning. Arrived District Corps office where copies of 3rd Quarter INPR's were obtained and copied, as were historical records in those files. Checked into hotel at approximately 1730. Ms. Ross arrived in the Boston area prior to monday, and attended a 1300 hrs meeting/phone conference with Jim Chambers, Darrell Deleppo and Barbara Reichert. The topic of the meeting was the potential problems with chemicals that might be encountered on Fort Devens.

3. 21 MARCH 1995: All references of areas visited are numbered as shown on the enclosed map from the Draft Archives Search Report Conclusions and Recommendations for Fort Devens, dtd Feb. 1995. Started Site visit in Area 8. Approximately 0940 team member James discovered one each 3 inch Stokes Mortar without fuze. The mortar was found at the rear of building 3712, above ground, and in an area that had been cleared by bulldozer the previous fall. The base perimeter fence had been removed, and the mortar was on the outside of the fence line. The location was marked and all team members left the area. GPS reading: N42° 32' 38.3" W71°35' 11.0". The team moved to Areas 6 and 12 where no hazards were found. Ms. Ross reported the presence of the 3 inch mortar to the BRAC office. The BRAC Office notified those personnel necessary, and as required by base procedures.

4. 22 MARCH 1995: Started the day in Area 22 and overlaying Area 23. Approximately 1015 in Area 22, on the side of the hill behind Building 3608 Mr. Fraser found the first of 11 each US 1 Gallon Chemical, Land Mine, HD. Ten of these mines were seen as we left the area. The eleventh mine was found later that day by the responding EOD team that had been called by the BRAC Office for the 3 inch Stokes mortar. Ms. Ross reported the mines to the BRAC Office, and was requested to show the Military Police the general area. LTC Taylor from the Military Police accompanied the team to the area where the EOD team from the

54th Ordnance Detachment, Fort Monmouth, NJ was already on site. MSG David Hurtle was in charge of the EOD team, and was informed of the situation by Mr. Fraser. MSG Hurtle advised LTC Taylor to request the assistance of the Technical Escort Unit that was on the base responding to an unrelated incident. GPS reading N42°31' 25.5" W71°37' 25.1". The EOD team informed us that a second 3 inch Stokes mortar was found in the general area of the first mortar found 21 March. The mortars were to be destroyed that afternoon. The ordnance inspection team left the area before the Technical Escort unit arrived so as to continue the site visit in other areas.

Area 21 was visited with no hazards discovered.

5. 23 MARCH 1995: Started in Area 18 where after approximately one hour two 8 inch sections of PVC pipe were found. The PVC pipes were broken, and what appeared to be a 3 3/8" X 1" shotgun shell inside each section of pipe. The items could possibly have been seismic charges left behind by a contractor doing work for the base. GPS reading N42°32' 07.8" W71°36' 32.5". The BRAC Office was made aware of the items, as was the Military Police that stopped to inquire who and what we were doing in the area.

Areas 17, 16, 24, 25, 12 and 10 were visited with no hazardous material found.

Ms. Ross was on a conference call with Carter Hunt, Jim Chambers, Darrell Deleppo and Jeff Neece at 1500. Points of interest were the discovery of the Stokes mortar and chemical land mines, and the progress being made on the site visit.

6. 24 MARCH 1995: Started in Area 7, continued on to Areas 13 and 11. No hazards were discovered. Drove to Areas 1 and 2 to familiarize the team with the area before ending the first week. A drum was spotted which appeared to be a 55 gal Type B Chemical drum. Additional research was accomplished, and the drum was reported to the BRAC Office on the 27th of March.

Team members W. K. James, Tajkowski and Fraser returned to St. Louis on the 1835 flight and arrived at 2040.

7. 25 AND 26 MARCH 1995 - WEEKEND

8. 27 MARCH 1995: Team members Fraser, Tajkowski and Counts departed St. Louis at 0750, and arrived in Boston at 1130 the same morning. Checked into hotel, picked up additional team member Ms. Ross and drove to Fort Devens. The Team met with Jim Chambers to report the 55 gal Type B Chemical drum. GPS reading N42°33' 51.0" W71°36' 40.0". Mr. Fraser contacted CEHND Safety to report the drum to Wayne Galloway and Tom Baksa. Referred Mr. Chambers to the Technical Escort Unit at Aberdeen Proving Ground concerning the drum.

Visited Area 14, no hazards were discovered.

9. 28 MARCH 1995:
Started with Areas 1 and 2 where Ms. Ross found a 3 inch Stokes mortar at approximately 1015. The area was marked; GPS reading N42°33' 45.9" W71°36' 36.0". The team continued with site visit completing Areas 1 and 2 without further incident. Completed Areas 3, 4 and 9 with no hazards discovered.

Reported the 3 inch Stokes mortar to BRAC Office.

10. 29 MARCH 1995:
Started with Area 27 then moved to Area 26. Completed both areas without incident. Team stopped into BRAC office to check progress of work with chemical drum that was located in overlaid area of Areas 1 and 2. The BRAC office was instructed by the Technical Escort Unit to treat the drum like a suspect chemical hazard, and use the Hazardous Waste Clean Up Team from the fire department.

Mr. Fraser escorted the MPs to the 3 inch Stokes mortar found in Area 2 as well as the location of the 55 gal drum Type B.

Area 5 was visited with no hazardous material being discovered.

11. 30 MARCH 1995:
Started in Area 20 without incident, and also completed Areas 19 and 15 with no hazards found.

Departed Fort Devens and returned to St. Louis arriving 1745 evening of the 30 March 1995.

Notes:
a. Explosive Ordnance Incident Report 54-049-95 and 54-053-95 refer to all Stokes mortars found, as reported above, to be Projectile, HE, Mk1, 3" Stokes Mortars.

b. The Technical Escort Unit reported that the eleven 1 gallon HD land mines, and 55 gallon Type B drum have been packaged and stored for further testing. Testing could be sometime this summer.

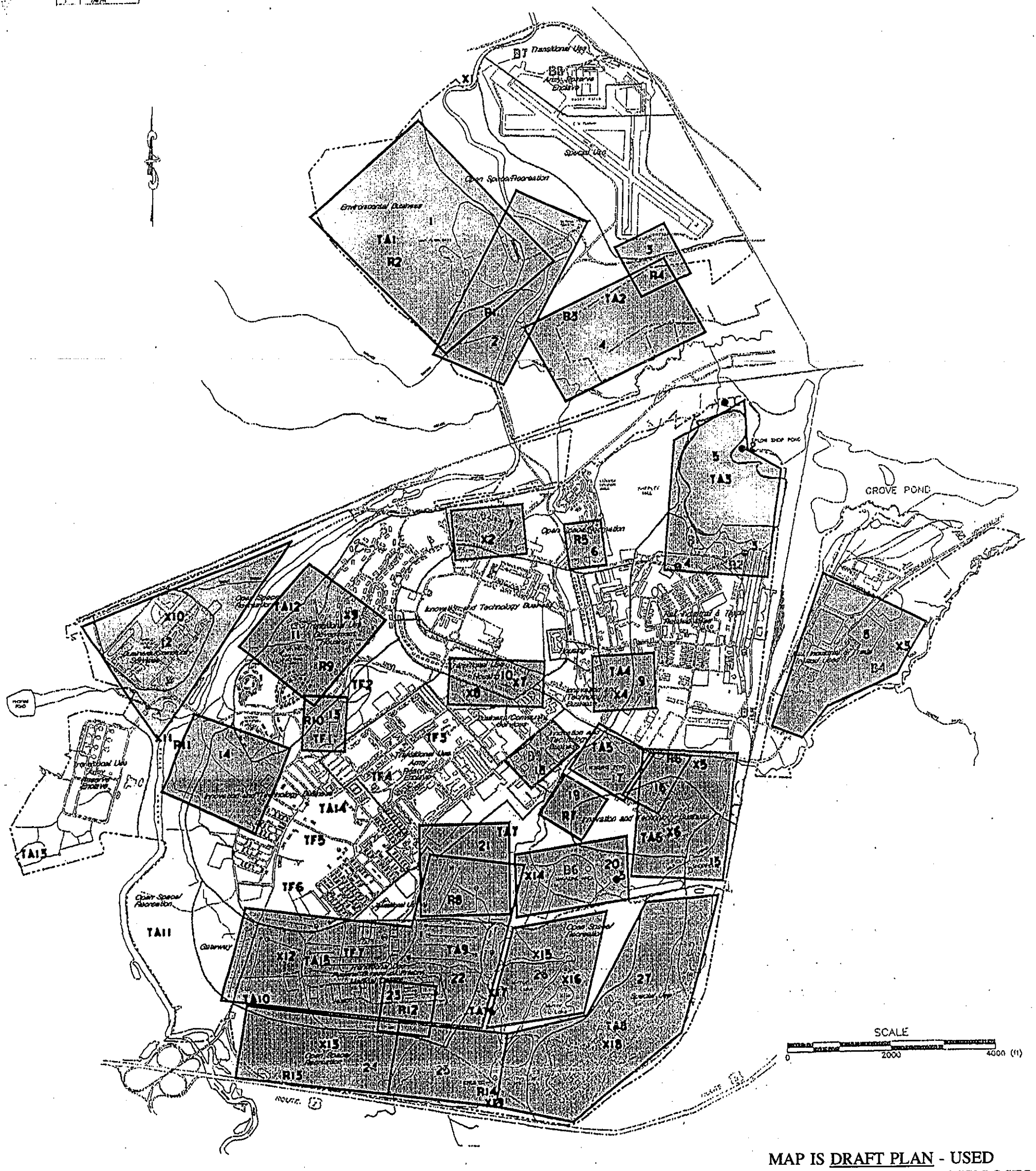
ROCHELLE ROSS
Project Manager

RANDY FRASER
Safety Specialist

DAVID TAJKOWSKI
Archivist/Historian

WILLIAM K. JAMES
Safety Specialist

HANK COUNTS
Safety Specialist




MAP IS DRAFT PLAN - USED FOR SITE INSPECTION PURPOSES ONLY.

LEGEND

- R RANGE *
- TA TRAINING AREA
- TF TRAINING FACILITY
- B OEW/CBW RELATED BUILDINGS
- ● MONITORING WELLS W/ EXPLOSIVES
- X FOUND ORDNANCE
- SITES RECOMMENDED FOR FURTHER ACTION

FORT DEVENS
NORTH AND MAIN POSTS
BASE REALIGNMENT AND CLOSURE
RECOMMENDED SITES
FOR REMEDIATION
1994 MAP

## 2.5 Confirmed Ordnance Presence

During research, two retired 41st EOD personnel were interviewed regarding ordnance found on the North and Main Posts. During the visual surface site inspection, 3 - 3" Stokes Mortars, 11 - M1, Chemical Land Mines, and 1 - 55 gallon Type B Chemical Drum were found.

Reports of found ordnance (conventional and chemical) are located in Appendix C. Locations of most of these items are noted on Maps M-14 and M-15.

These numerous reports indicate that unexploded ordnance and/or chemical warfare items may be located subsurface on the North and Main Posts.

## 3.0 Recommendations

Refer to Map M-15 for locations of those sites below which are recommended for further action.

In general, it is recommended that area be statistically swept (either 10%, 15%, 20%, etc.) with a magnetometer to determine if ordnance may be buried. If a hit is encountered, then it is recommend the entire site be swept. If a range was previously located on a site, the size was determined based on the particular range's maximum firing range and safety fan and the topography of the land.

It is further recommended that recent survey's (i.e., excavations) are taken into consideration when it is determined which and how much of each site is to be surveyed.

SITE NO.: 1
SIZE (Acres): 334
RECOMMENDED ACTION: statistically swept
PAST USES:

This site was designated a training area on the 1954, 1957, and 1961 range maps. It was also the location of an anti-tank range and carbine range. 1917 historical maps identify firing trenches and machine gun ranges in this location. During this time, stokes (or trench) mortars were fired on post. This was probably the location for this type of training. Small arms were probably used on the machine gun ranges. A rectangular area which could be a trench is seen on the aerial photos. This could have been a *firing point* or a *target trench*. A *sub-cal device for 37mm and 37mm* projectiles could have been fired on the anti-tank range. 2.36" rockets may have also been used on this range. Small arms would have been used on the carbine range. According to an interview with Mr. Tom O'Donnell, a small boy may have found a grenade somewhere on the North Post. During the site visit, 1 - Projectile, HE, Mk1, 3" Stokes Mortar and 1 - 55 gallon Chemical Drum, Type B were found in this area.

SITE NO.: 2
SIZE (Acres): TOTAL: 20 (FUDS - 11)
RECOMMENDED ACTION: statistically swept
PAST USES:

This area was designated an anti-tank range on the 1942 range map. The site was also a training area in 1954, 1957, and 1961. Note that a portion of this site is no longer within the installation boundaries. According to an interview with Mr. Tom O'Donnell, a small boy may have found a grenade somewhere on the North Post.

SITE NO.: 3
SIZE (Acres): TOTAL: 24 (FUDS - 9)
RECOMMENDED ACTION: statistically swept
PAST USES:

This was the location of a rifle and machine gun range. Small arms were most likely fired here. The site was also part of a training area. According to an interview with Mr. Tom O'Donnell, a small boy may have found a grenade somewhere on the North Post.

SITE NO.: 4
SIZE (Acres): TOTAL: 201 (FUDS - 78)
RECOMMENDED ACTION: statistically swept
PAST USES:

This site was a training area, identified on 1954, 1957, and 1961 historical maps. Within this training area were an anti-tank range (site 2) and a rifle and machine gun range (site 3). According to an interview with Mr. Tom O'Donnell, a small boy may have found a grenade somewhere on the North Post.

SITE NO.: 5
SIZE (Acres): 121
RECOMMENDED ACTION: statistically swept
PAST USES:

On the 1954 and 1957 range maps, this area (adjacent to the western side of Barnum Road) was designated "Ordnance Area". The 1952 Building Layout Plans identify these buildings as barracks, motor repair shops, storage and issue warehouse. The type of ordnance being that which is related to vehicles. Although, an igloo, unknown use, is also identified (B4). Stokes mortars were also found in this area (X3). Adjacent to the western boundary, two Projectile, HE, Mk1, 3" Stokes Mortars were found during the site inspection (X20). Craters and trenches are seen in this area on photos dated 1922.

SITE NO.: 6
SIZE (Acres): TOTAL: 68.5 (FUDS - 65)
RECOMMENDED ACTION: statistically swept
PAST USES:

A majority of this site is outside of the installation boundary. Based on 1922 photos and items found during the site inspection, it is obvious this area was used by troops stationed at Ft. Devens. A circular target, craters, and trenches are seen on 1922 photos in this area. During the site inspection, two Projectile, HE, Mk1, 3" Stokes Mortars were found within this area.

SITE NO.: 7
SIZE (Acres): 169
RECOMMENDED ACTION: statistically swept
PAST USES:

Several monitoring wells around this area have detected explosives--1,3-Dinitrobenzene, 1,3,5-Trinitrobenzene, and RDX. Both 1,3-Dinitrobenzene and 1,3,5-Trinitrobenzene are insoluble in water and 1,3,5-Trinitrobenzene explodes when exposed to heat or shock. This area was also used for training. Several ordnance related buildings (ordnance magazines, pyrotechnics storage, ordnance shops, and ordnance storage) were located here also.

SITE NO.: 8
SIZE (Acres): 23
RECOMMENDED ACTION: statistically swept
PAST USES:

This area was used for hand grenade practice in the 1930's. In the 1940's, it was used as an anti-tank range and a skeet range. The outline of the hand grenade practice, as shown on the 1934 map, is seen on aerial photos. The skeet range is also seen. Again, ammunition used on these ranges was most likely .22-cal and other small arms, 37mm, and possibly 2.36" rockets. No ordnance has been found in this area.

SITE NO.: 9
SIZE (Acres): 12
RECOMMENDED ACTION: statistically swept
PAST USES:

According to a personal interview, ordnance has been found (unknown type) in this area. Research did not disclose a range or training area in this location.

SITE NO.: 10
SIZE (Acres): 35
RECOMMENDED ACTION: statistically swept
PAST USES:

Boulder Hill was used as a training area and ordnance (unknown type) has been found. It is near Robbins Pond where training also took place.

SITE NO.: 11
SIZE (Acres): 34
RECOMMENDED ACTION: statistically swept
PAST USES:

Over 200 stokes mortars have been found buried in this area. Research did not reveal that this was the location of any ranges or training areas.

SITE NO.: 12
SIZE (Acres): 82
RECOMMENDED ACTION: statistically swept
PAST USES:

This site has been a training area and was also the location of an anti-tank range. Ordnance consisting of small arms and a 3.5" rocket have been found in this area also.

SITE NO.: 13
SIZE (Acres): 13
RECOMMENDED ACTION: statistically swept
PAST USES:

This was the location of an anti-tank range. Ammunition which was probably fired here was .22-cal, possibly other small arms ammunition, and 37mm. Since it was an anti-tank range, rockets may have been fired here also.

SITE NO.: 14
SIZE (Acres): 11
RECOMMENDED ACTION: statistically swept
PAST USES:

This site has been a rifle and machine gun range and also a pistol range. All along the eastern side of the river was designated a training area. According to Mr. Tom O'Donnell, a portion of this site (the southern edge) has been swept in the past when the moving of the Shirly Housing was considered. No ordnance was uncovered.

SITE NO.: 15
SIZE (Acres): 149
RECOMMENDED ACTION: statistically swept
PAST USES:

In 1957, this area was designated a training area. Stokes mortars and rifle grenade booms have been found on this site also. Grenades were found just south of here in the river. Although the entire area west of the river was designated a training area, only the north half is recommended to be statistically swept since the southern half is remaining under the Army's jurisdiction.

SITE NO.: 16
SIZE (Acres): 9
RECOMMENDED ACTION: statistically swept
PAST USES:

All along the eastern side of the river was designated a training area. Grenades have been found in the river here (X11).

SITE NO.: 17
SIZE (Acres): 17
RECOMMENDED ACTION: statistically swept; consider soil and water sampling
PAST USES:

The buildings located here were the Chemical Warfare Headquarters, Storage, and Warehouse. Troops trained with Chemical ID Sets. It is possible these items were stored (and possibly disposed of) here. There have been no reports of chemical hazards being uncovered. During the site inspection, items which could have been seismic charges were found within this site. These were probably left behind by a contractor.

SITE NO.: 18
SIZE (Acres): 34
RECOMMENDED ACTION: statistically swept
PAST USES:

Documentation stated that amphibious training with floating smoke pots and demolition charges on land to simulate live bombs was conducted. It is possible that some ordnance could be found in the pond.

SITE NO.: 19
SIZE (Acres): 30
RECOMMENDED ACTION: statistically swept
PAST USES:

Rifle and machine gun ranges, BAR and Carbine range, and a training area were located on this site. Also, training with smoke and explosives on the shore of nearby Robbins Pond was conducted. Ordnance was also found within this site (X5). Firing points could be seen on the 1951 aerial photos.

SITE NO.: 20
SIZE (Acres): 9
RECOMMENDED ACTION: statistically swept
PAST USES:

A rifle and machine gun range was located on this site. It was also designated a training area in 1954. Several fox-holes were seen during the site inspection.

SITE NO.: 21
SIZE (Acres): 69
RECOMMENDED ACTION: statistically swept
PAST USES:

This site was once a training area. It is also near a former rifle and machine gun range, and Robbins Pond where amphibious training took place. Ordnance has been found in this area on two separate occasions. The ordnance found consisted of 37mm

projectiles, ammo cans, and .30-cal (casings?). Near here, a monitoring well has detected 1,3-Dinitrobenzene and 1,3,5-Trinitrobenzene.

SITE NO.: 22
SIZE (Acres): 69
RECOMMENDED ACTION: statistically swept
PAST USES:

This has been the location of the magazine area since before WWII. Ordnance has been found near here and a monitoring well has detected 1,3-Dinitrobenzene and 1,3,5-Trinitrobenzene.

SITE NO.: 23
SIZE (Acres): 36
RECOMMENDED ACTION: statistically swept
PAST USES:

This area was once a training area and the location of a rifle and machine gun range. Also, two FS filled stokes mortars were found somewhere on the golf course. One of these was found near the cemetery.

SITE NO.: 24
SIZE (Acres): 378
RECOMMENDED ACTION: statistically swept
PAST USES:

This entire area was a training area. Stoke mortars (X15) and grenades (X17) have bee found in Mirror Lake and grenade booms (X16) have been found near Little Mirror Lake. Although no ranges were located here, ammo boxes, ammunition, gas masks, M-1 clips, and practice grenades have also been found (X18).

SITE NO.: 25
SIZE (Acres): 245
RECOMMENDED ACTION: statistically swept
PAST USES:

This site encompasses that parcel being transferred to the Bureau of Prisons. This site was once training areas, and the location of an anti-tank range. It is possible that small arms, .22-cal, and 37mm projectiles may be found in this area. Since the target butts were on the northern side of the road, it is unlikely that anything larger than that mentioned above was fired here. Two FS filled stokes mortars were also found somewhere on the golf course (one was found just off of the 10th green, near the cemetery-X24) and additional stokes mortars were found on the western end of the course (X12). During the site inspection, 11-1 gallon HD Land Mines were found (X21).

SITE NO.: 26
SIZE (Acres): 112
RECOMMENDED ACTION: statistically swept
PAST USES:

The southwest corner of this site was the location of a rifle and machine gun range and a pistol range. A horseshoe shaped berm and a marshy area just west of this berm were seen on the aerial photos. Also in this area, grenade pieces were found. According to a memorandum from the Environmental Management Office, a range was possibly located on the eastern end of this site (R14). A track of some sort and target area were uncovered. According to Mr. Heleg-Greza, 37mm projectiles were also found in this area. Based on the type of ordnance found, this could possibly have been some sort of anti-tank range.

# APPENDIX A

ORDNANCE, AMMUNITION AND EXPLOSIVES
RISK ASSESSMENT CODE FORM

# RISK ASSESSMENT PROCEDURE FOR ORDNANCE AND EXPLOSIVE WASTE (OEW) SITE

| | | | |
|---|---|---|---|
| Site Name | FORT DEVENS | Rater's Name | ROCHELLE ROSS |
| Site Location | AYER, MASSACHUSETTS | Phone No. | 314-331-8784 |
| DERP Project# | BRAC BASE | Organization | CELMS-PM-M |
| Date Completed | APRIL 28, 1995 | RAC Score | 1 |

OEW RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OEW risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OEW hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability.** Personnel involved in visits to potential OEW sites should view the CEHND videotape entitled "A Life Threatening Encounter: OEW."

Part I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition

| | VALUE |
|---|---|
| Medium/Large Caliber (20mm and larger) | (10) |
| Bombs, Explosive | (10) |
| Grenades, Hand and Rifle, Explosive | (10) |
| Landmines, Explosive | 10 |
| Rockets, Guided Missiles, Explosive | (10) |
| Detonators, Blasting Caps, Fuzes, Boosters, Bursters | 6 |
| Bombs, Practice (w/spotting charges) | 6 |
| Grenades, Practice (w/spotting charges) | 4 |
| Landmines, Practice (w/spotting charges) | 4 |
| Small Arms (.22 cal - .50 cal) | (1) |
| Conventional Ordnance and Ammunition (Select the largest single value) | 10 |

What evidence do you have regarding conventional OEW? Stokes Mortars, grenades, 100-lb bombs and other ammunition have been found on the North and Main Posts. 3-3" Stokes were found March 1995.

B. Pyrotechnics (For munitions not described above)

| | VALUE |
|---|---|
| Munitions (Container) containing White Phosphorus or other Pyrophoric Material (i.e., Spontaneously Flammable) | (10) |
| Munitions Containing A Flame or Incendiary Material (i.e., Napalm, Triethylaluminum Metal Incendiaries) | 6 |
| Flares, Signals, Simulators, Screening Smokes (other than WP) | 4 |
| Pyrotechnics (Select the largest single value) | 10 |

What evidence do you have regarding pyrotechnics? White Phosphorous grenades, flame throwers, screening smokes, and simulators have been used and stored at Ft. Devens.

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized.)

| | VALUE |
|---|---|
| Primary or Initiating Explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.) | (10) |
| Demolition Charges | (10) |
| Secondary Explosives (PETN, Compositions A, B, C Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.) | 8 |
| Military Dynamite | 6 |
| Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.) | 3 |
| High Explosives (Select the largest single value) | 10 |

What evidence do you have regarding bulk explosives? Lead Azide, demolition charges, secondary explosives, and military dynamite have been found, used, and/or stored at Ft. Devens.

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized)

| | VALUE |
|---|---|
| Solid of Liquid Propellants | 6 |
| Propellants | 0 |

What evidence do you have regarding bulk propellants? None of the documents indicated that bulk propellants were used.

E. *Chemical Warfare Materiel and Radiological Weapons*

| | VALUE |
|---|---|
| Toxic Chemical Agents (Choking, Nerve, Blood, Blister) | (25) |
| War Gas Identification sets | (20) |
| Radiological | (15) |
| Riot Control and Miscellaneous (Vomiting, Tear) | (5) |

Chemical and Radiological (Select the largest single value) 25

What evidence do you have regarding chemical/radiological OEW? All of the above items have been found, used, and or stored at Ft. Devens. Two mustard (or HD) filled stokes mortars have been found on (in a training room--per interview with Tom O'Donnell)and off (memorandum from Pine Bluff Arsenal dated 1 June 1994, Subject: Munitions Recovered Outside of Military Installations) of the installation. 11-Chemical Land Mines and 1-55 gallon drum were found March 1995.

==========

Total Hazard Severity Value
(Sum of the Largest Values for A through E--Maximum of 61) 55
**Apply this value to Table 1 to determine Hazard Severity Category.**

TABLE 1

HAZARD SEVERITY*

| *Description* | *Category* | *Hazard Severity Value* |
|---|---|---|
| CATASTROPHIC | (I) | 21 and greater |
| CRITICAL | II | 10 to 20 |
| MARGINAL | III | 5 to 9 |
| NEGLIGIBLE | IV | 1 to 4 |
| **NONE | | 0 |

*** Apply Hazard Severity Category to Table 3**

**If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC Score of 5 to determine your appropriate action.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used DOD site.

*AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD*
(Circle all values that apply)

A. Location of OEW Hazards

| | VALUE |
|---|---|
| On the surface | (5) |
| Within Tanks, Pipes, Vessels or Other confined locations | 4 |
| Inside walls, ceilings, or other parts of Buildings and Structures | 3 |
| Subsurface | (2) |
| Location (Select the single largest value) | 5 |

What evidence do you have regarding location of OEW? Several buildings are all over the installation. The ordnance items which have been found, have been subsurface,under water, and on the surface (surface items were found during the site inspection March 1995)

B. Distance to nearest inhabited locations or structures likely to be at risk from OEW hazard (roads, playgrounds, and buildings).

| | VALUE |
|---|---|
| Less than 1250 feet | (5) |
| 1250 feet to 0.5 miles | 4 |
| 0.5 miles to 1.0 miles | 3 |
| 1.0 miles to 2.0 miles | 2 |
| Over 2 miles | 1 |
| Distance (Select the single largest value) | 5 |

What are the nearest inhabited structures? Ordnance could be anywhere on the site.

C. Numbers of buildings within a 2 mile radius measured from the OEW hazard area, not the installation boundary.

| | VALUE |
|---|---|
| 26 and over | (5) |
| 16 to 25 | 4 |
| 11 to 15 | 3 |
| 6 to 10 | 2 |
| 1 to 5 | 1 |
| 0 | 0 |

Number of Buildings (Select the single largest value) 5

Narrative The area is mostly buildings.

D. Types of Buildings (within a 2 mile radius)

| | VALUE |
|---|---|
| Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers | (5) |
| Industrial, Warehouse, etc. | 4 |
| Agricultural, Forestry, etc. | 3 |
| Detention, Correctional | 2 |
| No Buildings | 0 |

Types of Buildings (Select the largest single value) 5

Describe types of buildings in the area. Residential, hospitals

E. Accessibility to site refers to access by humans to ordnance and explosive wastes. Use the following guidance:

| BARRIER | VALUE |
|---|---|
| No barrier or security system | (5) |
| Barrier is incomplete (e.g. in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing. | 4 |
| A barrier, (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site. | 3 |
| Security guard, but no barrier | 2 |
| Isolated site | 1 |
| A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility; or An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates, or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility). | 0 |

Accessibility (Select the single largest value) 5

Describe the site accessibility. _____

_____

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion by beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

| | VALUE |
|---|---|
| Expected | (5) |
| None Anticipated | 0 |

Site Dynamics (Select largest value) 5

Describe the site dynamics. Ft. Devens is to be surplused in the near future. Construction may take place.

Total Hazard Probability Value
(Sum of Largest Values for A through F--Maximum of 30) 30

**Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.**

TABLE 2

HAZARD PROBABILITY

| Description | Level | Hazard Probability Value |
|---|---|---|
| FREQUENT | (A) | 27 or greater |
| PROBABLE | B | 21 to 26 |
| OCCASIONAL | C | 15 to 20 |
| REMOTE | D | 8 to 14 |
| IMPROBABLE | E | less than 8 |

*** Apply Hazard Probability Level to Table 3.**

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

| Probability Level | | FREQUENT A | PROBABLE B | OCCASIONAL C | REMOTE D | IMPROBABLE E |
|---|---|---|---|---|---|---|
| Severity Category: | | | | | | |
| CATASTROPHIC | I | (1) | 1 | 2 | 3 | 4 |
| CRITICAL | II | 1 | 2 | 3 | 4 | 5 |
| MARGINAL | III | 2 | 3 | 4 | 4 | 5 |
| NEGLIGIBLE | IV | 3 | 4 | 4 | 5 | 5 |

RISK ASSESSMENT CODE (RAC)

(RAC 1) Expedite INPR, recommending further action by CEHND - Immediately call CEHND-ED-SY--commercial (205) 955-4968 or DSN 645-4968.

RAC 2 High priority on completion of INPR - Recommend further action by CEHND.

RAC 3 Complete INPR - Recommend further action by CEHND.

RAC 4 Complete INPR - Recommend further action by CEHND.

RAC 5 Usually indicates that no further action (NOFA)is necessary. Submit NOFA and RAC to CEHND.

Part IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

Training on Fort Devens involved conventional ordnance as well as chemical munitions. Two H or HD filled stokes mortars and two FS filled stokes mortars have been found both on and off of the installation. Grenades have been found in Mirror Lake and in the Nashua River. Rockets have been found in housing areas on base. Three 3" Stokes Mortars, 11 Chemical Land Mines, and 1 55 gallon Type B Chemical Drum were found during the site inspection. The potential that additional ordnance may be found is high.

It is recommended that further action be conducted.

# APPENDIX B

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ORDNANCE, AMMUNITION AND EXPLOSIVES
**ARCHIVES SEARCH REPORT**
**CONCLUSIONS AND RECOMMENDATIONS**
FOR
**FT. DEVENS**
AYER, MASSACHUSETTS

APPENDIX B

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